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ABSTRACT

The factors that influence the first-year persistence of first generation college students at four-year institutions were studied using data from the Beginning Postsecondary Students (BPS) database. The BPS is a longitudinal study of first-time students in the 1995 National Postsecondary Student Aid Study. First generation students are those whose parents did not attend college. Based on logistic regression results, first generation status is a factor in the persistence of college students. First generation students are 4% less likely to persist than second generation students. Several social capital variables, such as attending a private high school, type of high school curriculum, taking remedial courses, and having siblings in college were not statistically significant in the logistic regressions. Not having e-mail, which could be construed as a form of social capital, and delaying entry into college had statistically significant negative effects on the odds that students would persist to their second year. Being from a family where a language other than English was spoken had a positive influence on the odds of persisting. Not participating in a study group with other students and dissatisfaction with college costs and intellectual development had negative impacts on persistence. The study discusses some implications for educators attempting to increase student persistence. (Contains 7 tables and 38 references.) (SLD)

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Factors Influencing the First-Year Persistence of First Generation College Students

Presented at the 2001 NEAIR Conference, Cambridge, MA
November 2001

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Introduction

First generation college students compose a substantial (and growing) proportion of students in higher education. There are significant differences in persistence and degree attainment rates between first generation students and second generation students (Table 1). Some of the differences may stem from lower levels of social capital on the part of first generation students. Social capital has been described as "social relationships from which an individual is potentially able to derive institutional support, particularly support that includes the delivery of knowledge-based resources, for example, guidance for college admission" (Stanton-Salazar & Dornbusch, 1995, p.115). Stanton-Salazar and Dornbusch observed that working class youths have substantially lower levels of social capital than middle class youths do.

The parents of first generation college students may be at a disadvantage in their ability to advise their children about college processes because they have a different set of social capital than the parents of second generation college students. Perna (2000, p.119) wrote, "Social capital may take the form of information-sharing channels and networking as well as social norms, values, and expected behaviors." Coleman (1988) wrote about the roles of parental human capital and the social capital of the family and the community in the intergenerational creation of human capital. He theorized that the social capital of the family was determined by the relationships between children, parents, and the community. He noted that both the human capital and social capital of her parents influenced a child's educational growth and aspirations. In their discussion of the literature on parental involvement in education, Cabrera and LaNasa (2000, p.20) wrote "as our literature review shows, parental involvement is directly related to the amount of information parents themselves have regarding college. First-hand exposure to postsecondary education greatly facilitates access to this information. College educated parents are more likely to see the long-term benefits associated to a college degree and to communicate this information to their children. They are also more knowledgeable of the curricular requirements and the mechanisms to finance college education".

Because their parents and perhaps also their peers and their neighbors lack experience in higher education and because the high schools they attended may not have had the resources available to assist students in the college application process, first generation students are at a distinct disadvantage in the college search process. They may not have been aware of the basic application processes for admission and financial aid or that they should take the SAT or ACT if they were interested in selective institutions. In addition, they may have been uninformed about or unable to afford programs designed to boost SAT/ACT scores.

Although college degree attainment is a major path to an enhanced socioeconomic status for first generation students and their children, too many first generation students are not succeeding in college. In order for first generation college students and their children to reap the same economic and social benefits enjoyed by students whose parents have graduated from college, first generation students must persist in college. To assist these students in their efforts to persist in postsecondary education as a first step towards attaining the credentials they need for success in the labor market and to inform leaders on the types of policy and institutional changes that are indicated, we, as researchers, need to discover the factors that are most influential in first-year persistence.

First generation status is also important because, in time, it may serve as a proxy for race in college admissions decisions. Since race may have, for all practical purposes, been eliminated by recent federal court decisions as a determining factor in admissions decisions, Somers and Cofers (2000) have suggested that first generation status could be utilized in place of race. To help inform this discussion, it will be useful to have more information about first generation students.

First Generation College Students

College students whose parents never attended college are frequently referred to as first generation college students. First generation college students account for a substantial portion of beginning college students. According to a recent report from the National Center for Education Statistics (NCES), first generation students made up 47% of the new students enrolling in higher education institutions in the 1995-96 school year (Kojaku, Nunez, & Malizio, 1998). This rate was up from the 43% reported for the 1989-90 school year (Nunez & Cuccaro-Alamin, 1998).

First generation college students differ from other students in their choices of two versus four-year colleges and in persistence and graduation rates. Nunez and Cuccaro-Alamin, in their study using data from the National Center for Education Statistics' 1989/90 Beginning Postsecondary Students (BPS) survey, found that first generation made up thirty percent of those attending four-year private institutions and thirty-five percent of those enrolling in four-year public institutions. They found substantial differences in persistence and attainment rates for first generation and other students (See Table 1). For the 1989/90 BPS students who enrolled in four-year institutions, non-first generation (or second generation as I will call them) students were more likely to have attained a degree within five years than were first generation students.

First generation students in the 1995/96 BPS study placed greater emphasis on improving their economic and occupational position than did second generation students. About 83% of the first generation students noted that it was an important to them to be well off financially compared to 75% of second-generation students. Almost 71% of first generation students wanted to be successful in their business career compared to 65% of the second-generation students (1996/96 BPS restricted license data).

The importance of attaining a bachelor's degree to a student's lifetime earning potential should not be underestimated. Bowen and Bok wrote there is "a commonsense understanding of the advantages associated with being a college graduate" (Bowen & Bok, 1998, p.55). They noted that even low achieving college graduates gain economic benefits from their degree through the "sheepskin effect". According to this theory, a person with a college degree (i.e. a sheepskin), regardless of which college it was from and the student's academic performance, will accumulate more economic and social benefits in their lifetime than an individual who attended college but never attained a degree. The U.S. Census Bureau reported that the average annual income for college graduates (age 18 and over) was almost 70% greater than the average income for individuals who had attended some college but had not obtained a degree (U.S. Bureau of the Census, 2000). The differences in earnings for a college graduate compared to a high school graduate are even more dramatic. Mortenson (2000) found that the lifetime income of male college graduates would be $1,160,000 more than that of high school graduates. Female college graduates will earn $600,000 more than female high school graduates will.

For those first generation students in the study who were able to persist and graduate, the economic pay-off was comparable to that of second generation students. The average annual salary in 1994 of first generation BPS students who had attained a bachelor's degree was $22,887 compared to $23,044 for second generation students (Nunez & Cuccaro-Alamin, Table 23). The first generation students with bachelor's degrees also obtained positions that were comparable to those of students with bachelor's degrees whose parents had been to college.

Since a college degree is a basic requirement for admission to graduate or professional schools, first generation students need to attain that degree so they can take advantage of graduate programs which offer additional opportunities for socioeconomic advancement.

There are intergenerational effects of obtaining a postsecondary education, what happens in college is important not only to first generation students but also to their children. Mortenson (1995) noted that while children whose parents have the least education are least likely to graduate high school and to attend college, the children of college graduates are most likely to graduate from high school and attend college. Ellwood and Kane (1998, p.351) wrote that education is "arguably our most important tool for ensuring intergenerational mobility". They noted that college educated parents may have a better understanding of the value of higher education and be more willing to help pay for their children's college education than other parents. This willingness to pay for a college education can be considered a measure of parental social capital. According to Mortenson (ibid, p.1), "Both high school graduation and college enrollment for those who graduate from high school are strongly related to parental educational attainment. ...That education has become increasingly important to not only that child's standard of living as an adult, but also the circumstances into which the next generation will be born".

Review of the Literature

What we know about first generation college students

There have been contradictory findings in many of the recent studies of first generation students. For instance, Nunez and Cuccaro-Alamin (1998), Martinez (1999) and Chase (2000) found that first generation status influenced persistence. On the other hand, Elkins (1996) and Whitley (1999) found that first generation status did not significantly contribute to attrition. Arredondo (1999) found that first generation students differed extensively from other students in a number of pre-college characteristics while Whitley found just the opposite.

First generation students may be unsure of their academic skills or may be more in need of basic or remedial classes than second generation students (Pratt and Skaggs (1989), Riehl (1994), Terenzini and others, and Burkhardt and Brown (1999). Riehl also found that first generation students had lower academic aspirations and expected to receive lower grades than did second generation students.

Inman and Mayes (1999) found that first generation students had stronger institutional commitments than did non-first generation students. While Grayson (1997) found that first generation students had lower levels of social integration than other students did, Attinasi (1989) found that social integration was important factor in the persistence of first generation students. Terenzini and others (1994) found that first

generation students delayed involvement in the social systems of college until they were assured that they could perform adequately academically. In addition, they found that first generation students had a more difficult time adapting to the social and academic systems of college than did other students.

First generation students benefited from having support from others, including mentors, peers, faculty, or "significant other" (Attinasi, Richardson & Skinner, 1992, Rendon, 1992 & 1996, and Gandara, 1994). But, studies by Terenzini and others (1996) and by York-Anderson and Bowman (1991) indicated that first generation students perceived less support for their education from their parents than did second generation students.

The persistence of first generation college students was adversely affected by their lack of knowledge of how colleges operate (York-Anderson & Bowman, 1991, Attinasi, Richardson & Skinner, Padron, 1992, and London, 1989, 1992, & 1996).

Methods

Research Question:
What factors influence the first-year persistence of first generation college students in four-year institutions?

Definitions:

- First-year persistence is defined as enrollment in postsecondary education from the first to second year.
- A college student is defined in this study as being a second-generation student if either of her parents attended college.
- A college student is defined in this study as being a first generation student if neither parent attended college.

Data: Beginning postsecondary students (BPS) 96/98 database:

The BPS 96/98 data were collected by the U. S. Department of Education's National Center for Education Statistics. The BPS is a longitudinal study that will follow first time students who were included in the 1995 National Postsecondary Student Aid Study from their first enrollment through their attainment or withdrawal from higher education.

The institution universe consisted of postsecondary institutions in the United States or Puerto Rico that offered more than a correspondence course, offered at least one academic or vocational program of study at least three months in duration, and were open to the public. The student universe consisted of first-time beginning students who enrolled in an eligible institution between May 1, 1995 and April 30, 1996, who were enrolled in either an academic or vocational program, who were not concurrently enrolled in high school, and were not enrolled just for a GED or high school degree completion.

The survey had a two stage sampling design. Eligible institutions were chosen in the first stage and eligible students within selected institutions were chosen in the second stage (Wine, Whitmore, Heuer, Biber, Pratt, & Carroll, NCES, 2000).

Design

Theoretical framework:

Cabrera, Castaneda, Nora, and Hengstler (1992) explored whether the Tinto and Bean models of student withdrawal from college could be merged to produce an integrated model. Cabrera, Nora, and Castaneda (1993) developed and tested such a model. According to the authors, this model had greater explanatory power than either the Bean or Tinto model has individually. This integrated model provides a good fit for the data and the research questions of my dissertation. I used the integrated model of student retention as the basis for theoretical framework for this study. There is an important difference between my use of the integrated model and the Cabrera, Nora, and Castaneda study. The Cabrera and others model is an institution based model; that is, it focuses on what happens to students within one particular institution. In my study, I look at student persistence, not just at the institutional level, but in postsecondary education as a whole. Figure 1 shows the variables included in the study.

Methods of Analysis

Cross-tabulations

In order to compare first generation and second generation students, cross-tabulations will be conducted using first generation status as the independent variable and first-year persistence as the dependent variable.

Binary logistic regression

Binary logistic regression analysis will be conducted using WESVAR with persistence as the dependent variable. The WESVAR software can correct for design effects resulting from the complex nature of the BPS survey. Two types of BPS weights were utilized. The first, B98AWT is the full-sample analysis weight. Fifty-one balanced repeated replicate weights were also utilized in this analysis.

Model Testing

The general model for this study is as follows:

$P = \exp(b_o + b_{fg}*X_{fg} + b_{bi}*X_{bi} + b_{ci}*X_{ci} + b_{ii}*X_{ii} + b_{ei}*X_{ei} + b_{fi}*X_{fi} + b_{ai}*X_{ai} + b_{si}*X_{si}) / (1 + \exp(b_o + b_{fg}*X_{fg} + b_{bi}*X_{bi} + b_{ci}*X_{ci} + b_{ii}*X_{ii} + b_{ei}*X_{ei} + b_{fi}*X_{fi} + b_{si}*X_{si} \cdot b_{gpai}*X_{gpai})$

with: Persistence = P, First Generation status = Xfg, Background variables = Xbi, Social Capital variables = Xci, External Factor variables = Xei, Financial Factor variables = Xfi, Integration variables = Xsi, and Academic Performance = Xgpai

Regressions were run for a) the full model with all 4-year students, b) first generation students and c) second-generation students.

Results

Cross-tabs

First Generation compared to second generation students

Table 2 shows the results of the cross-tabulations of selected variables and first generation status. First generation students are more likely to be non-white than are

second generation students (37% versus 22%). About 14% of first generation students were from homes where English was not the primary language compared to 6% of second generation students.

First generation students were more likely to come from larger families with 42% from families of at least 5 versus 35% for second generation students. 18% of first generation students came from families of at least 7, while about 9% of second-generation students were from families that size.

First generation family incomes were substantially below those of second generation students. More than half of the second-generation families had incomes of at least the 73rd percentile versus 24% of first generation families.

23% of first generation students reported their average high school grades as A's versus 37% of second generation students. Second generation students were more likely than first generation students to have had a high school curriculum that was either moderately rigorous or rigorous (36% versus 21%). 17% of second generation students attended a private high school compared to 8% of first generation students. 60% of second generation reported combined SAT scores of at least 940 while only 25% of first generation students had similar scores.

In college, first generation students were more likely to have started as part-time students (14%) than were second generation students (8%). 18% of first generation students reported that they took at least one remedial course compared to 10% of second generation students. 23% of first generation students delayed entry into postsecondary education compared to 11% of second generation students.

First generation students were more likely to be receiving some form of financial aid (87%) than were second generation students (73%). First generation students were more likely to be working than others (87% versus 79%).

Second generation students were more likely to live in campus housing than first generation students (70% versus 50%). Almost 51% of second generation students attended a college at least 150 miles from home compared with 40% of first generation students.

There were some significant differences in social integration between first and second-generation students. For each of the integration variables, first generation students were more likely to have never been involved than were second generation students. 43% of first generation students reported that they never participated in fine arts activities versus 29% of the second-generation students. 27% of the first generation students did not take part in study groups compared to 19% of first generation students.

In terms of satisfaction variables, there were not significant differences for satisfaction with the cost of attending college, intellectual development, or with the prestige of the school attended. There were significant differences in satisfaction with campus climate (first generation students were slightly more satisfied than other students) and in satisfaction with instructors ability to teach (with second generation students more satisfied than first generation students).

In regards to first year outcomes, although second generation students reported slightly higher average GPA's than first generation students, the differences were not statistically significant.

Social Capital Variables (Table 3)

Students who took a more rigorous high school curriculum were more likely to persist to their second year than were students taking a less rigorous program. Students with a moderately rigorous curriculum had a 92% persistence rate while those with a rigorous curriculum had a 97% persistence rate. In comparison, students whose curricula were slightly rigorous or less had persistence rates of between 83 and 88%.

Students who delayed their entry into postsecondary education had a 68% persistence rate compared to the 91% rate for those who entered directly from high school.

Students who took at least one remedial course in college were slightly less likely to persist than others (84% versus 87%).

Students who had friends at the college they attended were slightly less likely to persist than others (but the difference was not statistically significant).

The location of the high school attended did not have a statistically significant impact on persistence. The type of high school attended did not affect persistence nor did having a sibling in college.

Students from smaller and larger sized families have lower persistence rates than others. Students from families with 7 or more members had a 69% persistence rate, which was considerably below the 90% rate of students from mid-sized families.

Persistence (Table 4)

The results of the cross-tabulations of first generation status with persistence to the second year of postsecondary education indicate that second generation students are more likely to persist than are first generation students. About 90% of second generation students persist to the second year compared to about 80% of the first generation students.

First Generation Status by Selected Variables by Persistence (Table 5)

Delayed entry – First generation students who delayed entry into college had a 58% persistence rate compared to 78% for second generation students.

English Not Primary Language – First generation students whose families spoke another language at home had an 87% persistence rate compared to 96% for second generation students.

High school location – High school location did not matter in the persistence of second-generation students. However, first generation students from urban schools had an 86% persistence rate (statistically different from the rates for suburban and rural students).

Type of high school attended – The type of high school (public or private) the student attended did not affect persistence for either group.

Loans and aid – Type of financial aid was significant for first generation students but not for second generation. First generation students with no aid had a 68% persistence rate compared with rates of 79-84% for aided students.

Fine Arts Involvement – The extent of participation in fine arts activities produced different persistence rates for first generation students but not for second generation students. First generation students who never participated in fine arts activities had a 73% persistence rate compared to 89% for those who often participated.

Met with Advisor – First generation students who never met with their advisor to discuss plans had a 58% persistence rate compared to 87% for those who often met with their advisor.

Logistic Regression

Table 6 shows significant results for all students, for first generation students and for second generation students. Table 7 shows delta-p for the significant variables.

a) Full-model (first and second generation students)

Based on the logistic regression results, first generation status was a factor in the persistence of college students.

The results for the social capital variables were mixed. Having a sibling in college, attending a private school, type of high school curriculum, and having friends at the same college were non-significant factors. Social capital variables that were significant included: being from a home where a language other than English was spoken, the size of the student's family, not having an email account, and delaying entry into college. The location of the high school attended was significant at the .1 level.

There were several financial variables that were statistically significant including the net cost of attending college, family income, hours worked, and satisfaction with the cost of attending college.

Two social integration variables were significant. These variables were meeting with advisor to discuss plans and participating in study groups. Social contact with faculty was significant at the .1 level.

Of the two academic integration factors, college GPA was statistically significant and dissatisfaction with intellectual development was significant at the .09 level.

b) First generation students

For first generation students, several social capital variables were statistically significant including: family size delayed entry into college, and English not being the primary language spoken at home. The location of the high school attended was significant at .12. While some of the financial variables in the model were not important, loans and other aid and did not work were significant. Working 1-10 hours was significant at .08.

Not having an email account and distance from home were also significant. Three integration factors were also significant for first generation students. These were not participating in fine arts activities, not meeting with advisor to discuss plans, and not going places with friends. Finally, college grades were also significant factors.

c) Second generation students

There were some discernable differences between the factors that were significant for first generation and second generation students. For example, delayed entry into college was significant at .08 and English not being the primary language spoken at home was significant at .055 for second generation students. Both of these variables were significant at .03 or less for first generation students. Net cost of attending college and family income were statistically significant for second generation students, but not for

first generation ones. Distance from home, no email account, dissatisfaction with the cost of attending college, and not participating in study groups were significant for second generation students as were college grades.

Analysis

a) Full model

Based on the logistic regression results, first generation status is a factor in the persistence of college students. First generation students are 4% less likely to persist than second generation students. Several social capital variables such as attending a private high school, type of high school curriculum, taking remedial courses, and having siblings in college were not statistically significant factors in the logistic regressions. Not having an email account, which could be construed as a form of social capital, and delaying entry into college (another social capital variable) had statistically significant negative affects on the odds that students would persist to their second year. Being from a family where a language other than English was spoken had a positive influence on the odds of persisting.

Not participating in a study group with other students decreases the odds of persistence to the second year. This is an area in which administrators and faculty may be able to increase retention rates at their institutions by actively promoting student participation in study groups.

Dissatisfaction with college cost and intellectual development both had negative impacts on persistence (-5.2% and -5.8% respectively). Students who did not meet with their advisor to discuss plans or met only sometimes were less likely to persist than students who met with their advisors often.

In terms of academic integration, students with higher grades were more likely to persist than students with the lowest grades.

b) First generation students

Some of the social capital factors were important to the persistence of first generation students. Students from families with 3 to 4 members were 12% more likely to persist than one from families of 7 or more people. Students who did not delay entry into college or were from families where English was not the primary spoken language were about 12% more likely to persist than others. Students from urban high schools were 7% more likely to persist than were students from rural schools. Students who did not have an email account were 19% less apt to persist than other students.

Students who received loans and other aid were 12% more likely to persist than unaided students. Students who did not work or worked between 1 and 10 hours were 12% more likely to persist than students working 31 or more hours.

First generation students who never participated in fine arts activities were 17% less likely to persist than students who often participated. Students who did not meet with an advisor to discuss plans were almost 24% less likely to persist than were students who often talked with their advisor.

c) Second generation students

Family income level played a role in the persistence of second generation students with students from the lowest income levels 11% less likely to persist than students from the highest levels.

Students attending college 51 to 150 miles from their homes were 4% more likely to persist than students at colleges more than 150 miles from their homes. It is interesting to compare this result to that of first generation students at colleges 51 to 150 miles from home who were 16% less likely to persist than students at colleges further from home.

Second generation student who only participated in study groups sometimes were 8% less likely to persist than were students who often took part in study groups.

Discussion

Based on this study, there seem to be several areas that offer opportunities to improve persistence for first generation students. Institutions could help their first generations students by increasing the opportunities (or mandating them) for students to meet with their advisors. Also, programs that encourage first generation students to enter college directly from high school may lead to increased persistence rates.

First generation students were less likely to have an email account and this fact had a negative influence on their persistence. Institutions can have special orientation or other programs for first generation students to get them acclimated to using email.

Since the fewer hours students worked, the more likely first generation students were to persist, institutions may want to limit the number of hours students can work per week on work-study jobs (at least during their freshmen year).

Finally, since involvement in fine arts activities may increase persistence, institutions could target resources or programs to raise the participation of first generation in these activities.

Future Research

I will be producing a reduced model of first year persistence based on these results as part of my dissertation.

Figure 1- Variables in the Study

Pre-college Variables	College Variables	Academic/Social Integration	Cost Related	Performance	Persistence to Second Year
First Generation Status	Attend part-time	Meet with advisor to discuss plans	Loan & aid	1st Year Grades	
Family size	Attend public institution	Frequency go to lectures, etc	Satisfaction with college cost		
Race/ethnicity	Any remedial courses taken	Satisfaction with intellectual development	Family income		
Gender	Delayed enrollment into PSE		Hours worked		
English was not primary language	Living in campus housing	Satisfaction with instructors' ability to teach			
High school Average GPA	Net cost of attending	Satisfaction with campus climate			
High school Curriculum type	Siblings in college	Satisfaction with school's prestige			
High school location	Friends attend same college	Frequency in study groups with other students			
Attended private high school	Distance from home to college	Frequency go places with friends			
Combined SAT scores	Undecided Major	Frequency have social contact with faculty			
	No email account	Frequency talk with faculty outside class			

Table 1

Persistence & Graduation Rates of 1989/90 BPS Students by First Generation Status
(5 Years after Initital Enrollment)

	Still Enrolled or Attained Degree	Not Enrolled/ No Degree
4 Year Public Institutions		
First Generation	37%	63%
Second Generation	54%	46%
4 Year Private Institutions		
First Generation	61%	39%
Second Generation	72%	28%

Source: Nunez & Cuccaro-Alamin, 1998

Table 2 - First Generation Status by High School Variables

First Generation X High school curriculum

	Didn't Meet new basic curr.	Met new basic curr.	Slightly Rigorous	Moderately Rigorous	Rigorous
2nd Gen	18%	4%	43%	18%	18%
1st Gen	22%	5%	52%	14%	7%
total	19%	4%	46%	17%	14%

p<.0001

First Generation X High school GPA

	a's	b's	c's & d's
2nd Gen	37%	55%	8%
1st Gen	23%	67%	10%
total	32%	59%	9%

p<.0001

First Generation X High school location

	urban	suburban	rural
2nd Gen	32%	58%	10%
1st Gen	31%	56%	13%
total	31%	58%	11%

p<.037

Table 2 - First Generation Status by High School Variables

First Generation X	Attended private high school	
	no	yes
2nd Gen	83%	17%
1st Gen	92%	8%
total	86%	14%

p<.0001

First Generation X	Combined SAT range			
	400-790	800-930	940-1090	1100-1600
2nd Gen	20%	20%	34%	26%
1st Gen	32%	42%	14%	11%
total	24%	27%	28%	21%

p<.0001

Table 2 - First Generation X Demographic Variables

First Generation X	English was 2nd language	
	no	yes
2nd Gen	94%	6%
1st Gen	86%	14%
total	91%	9%

p<.0001

First Generation X	gender	
	male	female
2nd Gen	46%	54%
1st Gen	44%	56%
total	45%	55%

First Generation X	Family size			
	2	3-4	5-6	7+
2nd Gen	6%	60%	26%	9%
1st Gen	8%	50%	24%	18%
total	7%	57%	25%	12%

p<.0001

Table 2 - First Generation X Demographic Variables

First Generation X	Family Income (percentile)			
	1-31	32-53	54-72	73+
2nd Gen	13%	13%	20%	55%
1st Gen	28%	24%	23%	24%
total	18%	16%	21%	45%

p<.0001

First Generation X	Race/ethnicity			
	Black	Asian	Hispanic	white
2nd Gen	9%	7%	7%	78%
1st Gen	16%	6%	15%	63%
total	11%	6%	9%	73%

p<.0001

First Generation X	Sibling in college	
	no	yes
2nd Gen	45%	55%
1st Gen	51%	49%
total	47%	53%

p<.001

Table 2 - First Generation Status X College Variables

First Generation X	Any Remedial Courses	
	no	yes
2nd Gen	90%	10%
1st Gen	82%	18%
total	87%	13%
p<.001		

First Generation X	Attended part-time	
	PT	FT
2nd Gen	8%	92%
1st Gen	14%	86%
total	10%	90%
p<.001		

First Generation X	Type of Institution Attended	
	public	private
2nd Gen	61%	39%
1st Gen	66%	34%
total	63%	37%

Table 2 - First Generation Status X College Variables

First Generation X	Delayed entry into PSE	
	did not delay	delayed
2nd Gen	89%	11%
1st Gen	77%	23%
total	85%	15%

p<.0001

First Generation X	Financial Aid			
	aided, no loans	loans & other aid	loans only	no aid
2nd Gen	26%	36%	11%	27%
1st Gen	27%	50%	9%	13%
total	27%	40%	11%	23%

p<.0001

First Generation X	Undeclared major	
	no	yes
2nd Gen	69%	31%
1st Gen	72%	28%
total	70%	30%

Table 2 - First Generation Status X College Variables

First Generation X	Net cost of attending college			
	0-2242	2243-4572	4573-7435	7436+
2nd Gen	14%	16%	21%	49%
1st Gen	26%	24%	28%	23%
total	18%	18%	23%	41%

p<.0001

First Generation X	Lived in campus housing	
	no	yes
2nd Gen	30%	70%
1st Gen	50%	50%
total	37%	63%

p<.0001

First Generation X	Distance from home to college			
	1-15	16-50	51-150	150+
2nd Gen	15%	15%	19%	51%
1st Gen	21%	22%	16%	40%
total	17%	17%	18%	48%

p<.0001

Table 2 - First Generation Status X College Variables

First Generation X	Hours worked per week				
	0 hrs	1-10 hrs	11-20 hrs	21-30 hrs	31+ hours
2nd Gen	21%	16%	45%	10%	8%
1st Gen	13%	13%	46%	14%	15%
total	18%	15%	45%	11%	10%

p<.0001

First Generation X	Goal - to be well-off financially	
	no	yes
2nd Gen	21%	78%
1st Gen	15%	85%
total	20%	80%

p<.001

Table 2 - First Generation Status X Social Integration

First Generation X	Involvement in fine arts activities		
	never	sometimes	often
2nd Gen	29%	55%	16%
1st Gen	43%	47%	10%
total	33%	52%	14%

p<.0001

First Generation X	Going places with friends		
	never	sometimes	often
2nd Gen	5%	22%	73%
1st Gen	12%	43%	45%
total	7%	28%	64%

p<.0001

First Generation X	Attend lectures, conventions, field trips		
	never	sometimes	often
2nd Gen	32%	59%	9%
1st Gen	40%	52%	8%
total	34%	57%	9%

p<.0001

Table 2 - First Generation Status X Social Integration

First Generation X	Meet with advisor about plans		
	never	sometimes	often
2nd Gen	10%	74%	16%
1st Gen	14%	67%	19%
total	11%	72%	17%

p<.0001

First Generation X	Have social contact with faculty		
	never	sometimes	often
2nd Gen	38%	52%	10%
1st Gen	42%	48%	10%
total	39%	51%	10%

First Generation X	Attend study group outside class		
	never	sometimes	often
2nd Gen	19%	59%	22%
1st Gen	27%	55%	18%
total	21%	58%	21%

p<.0001

Table 2 - First Generation Status X Satisfaction Variables

First Generation X	Satisfied with campus climate	
	no	yes
2nd Gen	12%	88%
1st Gen	8%	92%
total	10%	90%

$p<.001$

First Generation X	Satisfied with cost of attending college	
	no	yes
2nd Gen	28%	72%
1st Gen	25%	75%
total	27%	73%

First Generation X	Satisfied with intellectual development	
	no	yes
2nd Gen	6%	94%
1st Gen	6%	94%
total	6%	94%

Table 2 - First Generation Status X Satisfaction Variables

First Generation X	Satisfied with prestige of school	
	no	yes
2nd Gen	10%	90%
1st Gen	11%	89%
total	10%	90%

First Generation X	Satisfied with instructors ability to teach	
	no	yes
2nd Gen	7%	93%
1st Gen	11%	89%
total	8%	92%

$p<.001$

Table 2 - First Generation Status X College GPA

First Generation X College GPA

	mostly A's	A's & B's	mostly B's	B's & C's	mostly C's	C's & D's	Mostly D's or below
2nd Gen	9%	21%	24%	21%	13%	6%	7%
1st Gen	8%	16%	22%	21%	16%	7%	11%
total	9%	19%	23%	21%	14%	6%	8%

Table 3 - Social Capital Variables by Persistence

High school curriculum X Persistence

		did not persist	persisted
Didn't meeet new	basic curr.	15%	85%
Met new	basic curr.	12%	88%
Slightly	Rigorous	17%	83%
Moderately	Rigorous	8%	92%
	Rigorous	3%	97%

p<.0001

High school location X Persistence

	did not persist	persisted
urban	11%	89%
suburban	14%	86%
rural	13%	70%

Attended private high school X Persistence

	did not persist	persisted
no	12%	88%
yes	11%	89%

Delayed entry into PSE X Persistence

	did not persist	persisted
did not delay	9%	91%
delayed entry	32%	68%

p<.0001

Table 3 - Social Capital Variables by Persistence

Any Remedial Courses X Persistence

	did not persist	persisted
no	13%	87%
yes	16%	84%

p<.054

Sibling in college X Persistence

	did not persist	persisted
no	13%	87%
yes	12%	88%

Family size X Persistence

	did not persist	persisted
2	17%	83%
3-4	10%	90%
5-6	10%	90%
7+	31%	69%

p<.0001

Table 4 - First Year Persistence

First Generation X	Persistence to Second year	
	no	persisted
2nd Gen	10%	90%
1st Gen	20%	80%
total	13%	87%

p<.0001

Table 6 - Results - Persistence to Second Year

Variables	Full-model Parameter Estimate	Full-model Std Error of Est.	Full-model Signif.	Full-model Odds Ratio	First Generation Parameter Estimate	First Generation Std Error of Est.	First Generation Signif.	First Generation Odds Ratio	Second Generation Parameter Estimate	Second Generation Std Error of Est.	Second Generation Signif.	Second Generation Odds Ratio
Intercept												
First Generation Status	-0.31	0.13	0.02	0.73								
male												
family size -two	0.55	0.355	0.124	1.74								
family size- 3 -4	0.36	0.224	0.107	1.44	1.03	0.504	0.045	2.79				
family size 5-6	0.5	0.248	0.046	1.65								
Black												
Asian												
Hispanic												
Other & Native Americans												
siblings in college -no												
siblings in college 1-2												
Took one or more remedial course												
Attend part-time												
Did not delay entry into college	0.87	0.218	0.000	2.39	0.99	0.375	0.01	2.7	0.76	0.424	0.077	2.14
English not primary language at home	1.11	0.357	0.003	3.02	1.09	0.492	0.029	2.99	1.35	0.694	0.055	3.87
attended public hs												
Curriculum - did not meet New Basic												
Met new basic												
Slightly Rigorous												
Moderately Rigorous												
hs gpa - A's												
hs gpa2 - B's												
hs location -urban	0.52	0.308	0.096	1.68	0.54	0.344	0.12	1.72				
hs location- suburban												
SAT scores 400-790												
SAT scores 800-930												
SAT scores 940-1090												
Aided, no loans				1.38								
Loans & other aid				1.32	1.07	0.424	0.013	2.92				
Loans only				1.31								
Net cost of college 0-2242	-0.64	0.347	0.067	0.53								
Net cost of College -2243-4572	-0.56	0.339	0.102	0.57					-0.78	0.374	0.04	0.46
net cost of college - 4573-7435	-0.52	0.309	0.099	0.6								
worked - no	0.64	0.288	0.029	1.9	1.1	0.473	0.023	2.98				
1-10 hrs	0.62	0.307	0.046	1.87	1.06	0.596	0.079	2.89				
11-20 hrs	0.45	0.216	0.041	1.57								
21-30 hrs												
family income (percentile)1-31	-0.55	304	0.073	0.58					-0.88	0.308	0.005	0.41
family income (percentile)32-53	-0.41	0.248	0.101	0.66					-0.72	0.253	0.006	0.49
family income (percentile)54-72	-0.49	0.211	0.023	0.61								

Variables	Full-model Parameter Estimate	Std Error of Est.	Signif.	Odds Ratio	First Generation Parameter Estimate	Std Error of Est.	Signif.	Odds Ratio	Second Generation Parameter Estimate	Std Error of Est.	Signif.	Odds Ratio
Did not live in campus housing												
Distance from home to college 1-15												
Distance from home to college 16-50												
Distance from home to college 51-150					-0.82	0.292	0.006	0.44	0.53	0.257	0.041	1.7
friends attend same college												
No email account	-0.94	0.189	0.000	0.39	-0.95	0.375	0.014	0.39	-0.6	0.268	0.001	0.38
Not Satisfied with college cost	-0.4	0.164	0.016	0.67					-0.49	0.208	0.021	0.61
Not Satisfied with campus climate												
Not Satisfied with intellectual developm	-0.44	0.255	0.091	0.65								
Not Satisfied with college's prestige												
Not Satisfied with instructor's ability to teach												
not involved with fine arts activities					-0.85	0.4	0.037	0.43				
sometimes involved with fine arts activities												
Did not meet with advisor about plans	-0.9	0.231	0	0.41	-1.13	0.477	0.02	0.32				
sometimes meet with advisor about plan	-0.51	0.201	0.012	0.6								
Did not go places with friends				1.54	1.14	0.568	0.048	3.12				
Sometimes go places with friends				1.23								
Did not go to lectures with friends				1.08								
Sometimes go to lectures with friends				1.31								
Did not have social contact with faculty	0.44	0.261	0.1	1.55								
Sometimes have social contact with faculty												
Was not in Study groups	-0.42	0.216	0.055	1.92								
Sometimes in Study groups									-0.69	0.305	0.026	0.5
Did not talk with faculty outside class												
Sometimes talk with faculty outside class												
College GPA- mostly A's	1.98	0.318	0.000	2.02	2.13	0.687	0.003	8.44	2.02	0.632	0.002	7
College GPA- A's & B's	1.81	0.327	0.000	2.29	1.39	0.489	0.006	4	2.29	0.473	0	9.91
College GPA- Mostly B's	1.79	0.313	0.000	2	1.69	0.54	0.002	5.44	2	0.384	0	7.7
College GPA- B's & C's	1.39	0.32	0.000	1.55	1.4	0.6	0.022	4.06	1.55	0.327	0	4.69
College GPA- mostly C's	0.86	0.286	0.003	1.06					1.06	0.405	0.011	2.87
College GPA- C's & D's												
Undecided as to college major												
cases (unweighted)	6065				1756				4309			
cases (weighted)	963575				293534				670041			
-2 log likelihood for full sample	521839				197304				292119			
-2 log likelihood for model with intercept only	719155				291564				407515			
negative log-likelihood	0.274				0.323				0.283			
likelihood ratio (Cox-Snell)	0.185	maximum possible value= 526			0.275	max value= 63			0.158	max value= 456		
likelihood ratio (Estrella)	0.213				0.322				0.183			

Table 7 - Delta-p's for Significant Variables in Second Year Persistence Regressions

	Full Model delta p	1st gen delta p	2nd gen delta p
First Generation Status	-3.9%		
family size -two	5.1%		
family size- 3 -4	3.6%	11.8%	
family size 5-6	4.7%		
Did not delay entry into college	7.1%	11.5%	5.1%
English not primary language at home	8.3%	12.2%	7.2%
hs location -urban	4.8%	7.3%	
Aided, no loans			
Loans & other aid		12.1%	
Loans only			
Net cost of college 0-2242	-9.1%		
Net cost of College -2243-4572	-7.7%		-9.5%
net cost of college - 4573-7435	-7.1%		
worked - no	5.7%	12.3%	
1-10 hrs	5.6%	12.0%	
11-20 hrs	4.3%		
21-30 hrs			
family income (percentile)1-31	-7.6%		-11.1%
family income (percentile)32-53	-5.4%		-8.6%
family income (percentile)54-72	-6.6%		
Did not live in campus housing			
Distance from home to college 1-15			
Distance from home to college 16-50			
Distance from home to college 51-150		-16.2%	3.9%
No email account	-14.7%	-19.3%	-6.8%
Not Satisfied with college cost	-5.2%		-5.4%
Not Satisfied with intellectual development	-5.8%		
not involved with fine arts activities		-16.9%	
sometimes involved with fine arts activities			
Did not meet with advisor about plans	-13.9%	-23.6%	
sometimes meet with advisor about plans	-6.9%		
Sometimes go to lectures with friends			
Did not have social contact with faculty	4.2%		
Sometimes have social contact with faculty			
Was not in Study groups	-5.5%		
Sometimes in Study groups			-8.1%
Did not talk with faculty outside class			
Sometimes talk with faculty outside class			
College GPA- mostly A's	11.0%	17.1%	8.5%
College GPA- A's & B's	10.6%	14.1%	8.9%
College GPA- Mostly B's	10.6%	15.6%	8.5%
College GPA- B's & C's	9.4%	14.2%	7.7%
College GPA- mostly C's	7.1%		6.3%
College GPA- C's & D's			

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